

## REVIEWS

*Research & Recovery in Vernal Pool Landscapes*. Edited by D. G. Alexander and R. A. Schlising. 2011. Studies From The Herbarium, No. 16. California State University. Chico, CA. 175 pp. ISBN 978-0-9761774-3-2. Price: \$12.00, paperback.

Vernal pools are seasonally ephemeral wetland ecosystems, generally of regions with a Mediterranean climate. Vernal pool basins become inundated during the winter, support a colorful procession of highly specialized plants and animals through the spring, and then become completely dry by summer. These charismatic ecosystems have intrigued scientists from a variety of disciplines: evolutionary biology, ecology, genetics, taxonomy, geology, hydrology, and (increasingly) conservation biology. This broad spectrum of workers has produced a large and diverse body of literature pertaining to vernal pools, much of which has been first presented to the scientific community in a series of vernal pool symposia and subsequent proceedings (Jain 1976b; Jain and Moyle 1984; Ikeda and Schlising 1990; Witham et al. 1998; Schlising and Alexander 2007). In the introduction to the proceedings from the first vernal pool symposium at the University of California at Davis, editor Subodh Jain acknowledged that he and other symposium organizers wondered if “there is enough known about vernal pools to hold such a meeting” (Jain 1976a). Many dozens of academic papers, six vernal pool conferences (counting the first), and 35 years later, scientists who study vernal pool ecosystems have again contributed original papers toward a conference proceedings: *Research & Recovery in Vernal Pool Landscapes* (Alexander and Schlising 2011). As with previous vernal pool conference proceedings, this most recent volume presents timely research on this important and imperiled California Floristic Province ecosystem.

The 14 contributed papers in this volume are arranged into five sections: Plants, Animals, Geology and Soils, Management, and Preservation History and Recovery Plans.

The Plants section begins with a paper by keynote address speaker Ellen Bauder, a plant ecologist who has studied the vernal pools of southern California for over 20 years. Drawing upon this experience, Bauder provides guidance on the topic of appropriate experimental design in vernal pool ecosystems, which can be highly variable spatially and temporally. The three other papers in this section include a population genetics analysis of Butte County meadowfoam

(*Limnanthes floccosa* ssp. *californica*) by Sloop; a far-reaching study of the ecology and evolution of vernal pool *Lasthenia* species by Emery et al.; and an ecological study by Leong examining the relationship between a vernal pool endemic plant species (*Blennosperma bakeri*) and its pollinators in naturally occurring and created vernal pools.

The Animals section comprises three research articles: the first is a methodologically innovative study of the migration distance of terrestrial-phase California tiger salamanders (*Ambystoma californiense*) by Searcy and Shaffer; the second is a contribution by Bogiatto et al. quantifying the usage of inundated vernal pools by geese and swans; and the third is an editors' summary of the presentation given by Rogers on macroinvertebrate bioassessment.

The Vernal Pools Geography and Soils section is composed of two papers. The first is a continuation of the important work of Holland to document the distribution and areal extent of vernal pool landscapes in the Central Valley. In this Herculean study, Holland prepared maps of vernal pool landscapes by manually photointerpreting high-resolution (1-m) National Agricultural Imaging Program (NAIP) imagery in a Geographic Information System (GIS). Using the resulting GIS layer, Holland calculated vernal pool extent as of 2005, overall loss since baseline conditions were evaluated (1976–1995), loss by county, and loss to various land-use types. Three color figures nicely illustrate the method employed, and a fold-out, full-color plate showcases the resulting map of vernal pool landscapes of the Central Valley. Also in this section is a paper prepared by the editors that summarizes an oral presentation by Conlin on substrates encountered during the Butte Area Natural Resources Conservation Service Soil Survey. Although brief, this paper is nicely illustrated and informative.

The Management and Preservation History and Recovery Plans sections together comprise five papers. Bauder and Bohonak describe a promising new method for vernal pool functional assessment in southern California; Schohr highlights the growing coalition of individuals and groups that support managed grazing of California landscapes (including vernal pool landscapes); and the editors provide a summary of a talk by Witham on the planning process associated with the construction of UC Merced. These sections conclude with two papers on the topic of vernal pool conservation planning in California and adjacent Oregon: one by a long-time water rights activist and vernal pool conservationist, and the other by a biologist from the U.S. Fish

and Wildlife Service. These contributions provide an interesting insight into the process, and yes, politics, of conservation planning.

This volume would be a solid addition to the bookshelves of anyone interested in the natural history of western North America, as many of the contributed papers are of general biological interest. For those who study vernal pools, however, this book is the latest in a series of indispensable vernal pool conference proceedings that together constitute a substantial portion of the research on these fascinating ecosystems. The volume is not perfect; for example, some might question the editors' choice to include summaries of oral presentations where the original presenter elected to not contribute a paper. But considering the strength of the contributed papers, the very low price (\$12.00 + tax, shipping), and the fact that any income from sales beyond the cost of printing benefits the non-profit organization Studies From the Herbarium, any minor critiques seem immaterial.

Additional information on this volume can be found at:

<http://www.csuchico.edu/herbarium/index.shtml>

<http://www.csuchico.edu/herbarium/studies/detailed-book-list.shtml>

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